

Claims

1-19 Canceled

20. (New) A method for determining an internal pressure of a vehicle tire during driving comprising:
- analyzing characteristic vibration behavior of at least one wheel of the motor vehicle, wherein an amplitude maxima of a resonance frequency is observed from a determined vibration spectrum;
 - determining and recording theoretical resonance frequency of at least one wheel with a preset theoretical pressure;
 - determining and storing in a memory theoretical gradients of a frequency curve above and below the resonance frequency;
 - forming a theoretical ratio from the gradients;
 - continuously determining an actual resonance frequency of the wheel during a driving operation;
 - continuously determining actual gradients of the frequency curve above and below the operational resonance frequency;
 - forming an actual ratio from the actual gradients;
 - comparing the theoretical ratio and the actual ratio to determine a divergence of the actual ratio from the theoretical ratio; and
 - producing a signal if the divergence from the actual ratio to the theoretical ratio exceeds a defined value.
21. (New) The method according to claim 20, wherein the signal is only produced if the divergence exceeds the defined value over a set period of time.

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22. (New) The method according to claim 20, wherein the theoretical gradients below and above the resonance are determined externally for one specific type of tire and are stored in memory on a memory storage medium that can be connected with the tire.
23. (New) The method according to claim 20, wherein outside influences brought about by at least one of a load, a temperature, a humidity, ambient air pressure, or an acceleration of the vehicle can be compensated for in the assessment of the frequency curve in the driving operation.
24. (New) The method according to claim 20, wherein the depth of the profile of the tire is taken into consideration in the assessment of the frequency curve in the driving operation.
25. (New) The method according to claim 20, wherein a calibration dependent on the speed of the motor vehicle is carried out on the moving motor vehicle with the help of an initialization device.
26. (New) The method according to claim 20, wherein a conversion from a time range to a frequency range is carried out by means of tables.
27. (New) The method according to claim 20, further comprising coupling with an indirect system in order to detect the minimum air pressure.
28. (New) A method for determining an internal pressure of a vehicle tire during driving comprising:

analyzing characteristic vibration behavior of at least one wheel of the motor vehicle, wherein an amplitude maxima of a resonance frequency is observed from a determined vibration spectrum;

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determining and recording a theoretical resonance frequency of the wheel with a preset theoretical pressure;

determining theoretical cut-off frequency of the maxima;

forming and storing in a memory a theoretical difference frequency from a higher cut-off frequency and a lower cut-off frequency;

determining an actual resonance frequency of the wheel during a driving operation;

determining an actual cut-off frequency of the maxima during the driving operation;

forming an actual difference frequency from the higher actual cut-off frequency and the lower actual cut-off frequency;

comparing the theoretical difference frequency and the actual difference frequency to determine a divergence of the actual difference frequency from the theoretical difference frequency; and

producing a signal if the divergence from the actual difference frequency and the theoretical difference frequency exceeds a defined value.

29. (New) The method according to claim 28, wherein the theoretical cut-off frequencies of the maxima are determined externally for one specific type of tire and are stored in memory on a memory storage medium that can be connected with the tire.
30. (New) The method according to claim 28, wherein outside influences brought about by at least one of a load, a temperature, a humidity, ambient air pressure, or an acceleration of the vehicle can be compensated for in the assessment of the frequency curve in the driving operation.
31. (New) The method according to claim 28, wherein the depth of the profile of the tire

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is taken into consideration in the assessment of the frequency curve in the driving operation.

32. (New) The method according to claim 28, wherein a calibration dependent on the speed of the motor vehicle is carried out on the moving motor vehicle with the help of an initialization device.
33. (New) The method according to claim 28, wherein a conversion from a time range to a frequency range is carried out by means of tables.
34. (New) The method according to claim 28, further comprising coupling with an indirect system in order to detect the minimum air pressure.
35. (New) A method for determining an internal pressure of a vehicle tire during driving comprising:

analyzing characteristic vibration behavior of at least one wheel of the motor vehicle, wherein an amplitude maxima of a resonance frequency is observed from a determined vibration spectrum;

determining and recording a theoretical resonance frequency of the wheel with a preset theoretical pressure;

determining and storing in a memory of a maximum theoretical amplitude value at the theoretical pressure of the tire;

determining an actual resonance frequency of the wheel during a driving operation;

determining an actual maximum amplitude value during the driving operation;

comparing the theoretical maximum amplitude and the actual maximum amplitude to determine a divergence of the actual maximum amplitude from the theoretical maximum amplitude; and

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producing a signal if the divergence from the actual maximum amplitude and the theoretical maximum amplitude exceeds a defined value.

36. (New) The method according to claim 35, wherein the theoretical maximum amplitude value is determined externally for one specific type of tire and is stored in memory on a memory storage medium that can be connected with the tire.
37. (New) The method according to claim 35, wherein outside influences brought about by at least one of a load, a temperature, a humidity, ambient air pressure, or an acceleration of the vehicle can be compensated for in the assessment of the frequency curve in the driving operation.
38. (New) The method according to claim 35, wherein the depth of the profile of the tire is taken into consideration in the assessment of the frequency curve in the driving operation.
39. (New) The method according to claim 35, wherein a calibration dependent on the speed of the motor vehicle is carried out on the moving motor vehicle with the help of an initialization device.
40. (New) The method according to claim 35, wherein a conversion from a time range to a frequency range is carried out by means of tables.
41. (New) The method according to claim 35, further comprising coupling with an indirect system in order to detect the minimum air pressure.
42. (New) A method for determining an internal pressure of a vehicle tire during driving comprising:

analyzing characteristic vibration behavior of at least one wheel of the motor

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vehicle, wherein an amplitude maxima of a resonance frequency is observed from a determined vibration spectrum;

determining and recording a theoretical frequency spectrum of the wheel with a preset theoretical pressure;

determining a theoretical approximate position of the resonance frequency;

transforming differential equations that describe the vibration behavior of the wheel;

selecting a theoretical range around the approximate position of the resonance frequency;

correlating the selected range with the transformed differential equations;

computing a theoretical rotational rigidity and a theoretical rotational damping;

determining an actual frequency spectrum of the wheel in during a driving operation and determining an actual approximate position of the resonance frequency;

selecting an actual range around the actual approximate position of the resonance frequency;

correlating the actual selected range of the determined resonance frequency with the transformed differential equations in order to determine an actual rotational rigidity and an actual rotational damping;

comparing the theoretical rotational rigidity and the actual rotational rigidity to determine a first difference;

comparing the theoretical damping and the actual damping to determine a second difference; and

producing a signal, if at least one of the differences exceeds a defined value.

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43 (New) (New) A method for determining an internal pressure of a vehicle tire during driving comprising:

analyzing characteristic vibration behavior of at least one wheel of the motor vehicle, wherein an amplitude maxima of a resonance frequency is observed from a determined vibration spectrum;

determining theoretical internal tire pressure in a theoretical condition in dependence on a rotational rigidity and rotational damping, wherein parameters that take into account tires that are typical for the vehicle are referred to;

determining actual internal tire pressure in an actual condition in dependence on the rotational rigidity and the rotational damping;

comparing the theoretical internal tire pressure and the actual internal tire pressure to determine a difference the theoretical internal tire pressure and the actual internal tire pressure; and

producing a signal if the difference exceeds a defined value.